Trend Study 00-2-01

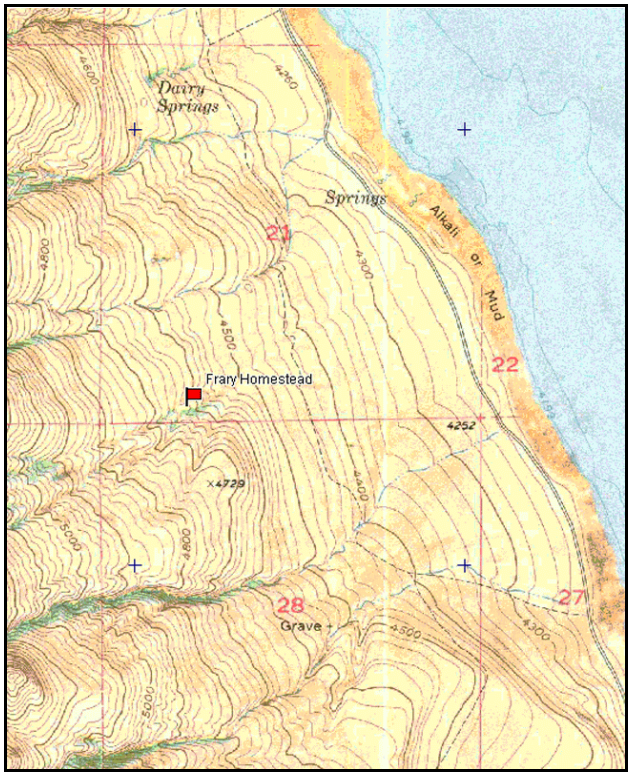
Study site name: Frary Homestead . Vegetation type: Annual Grass .

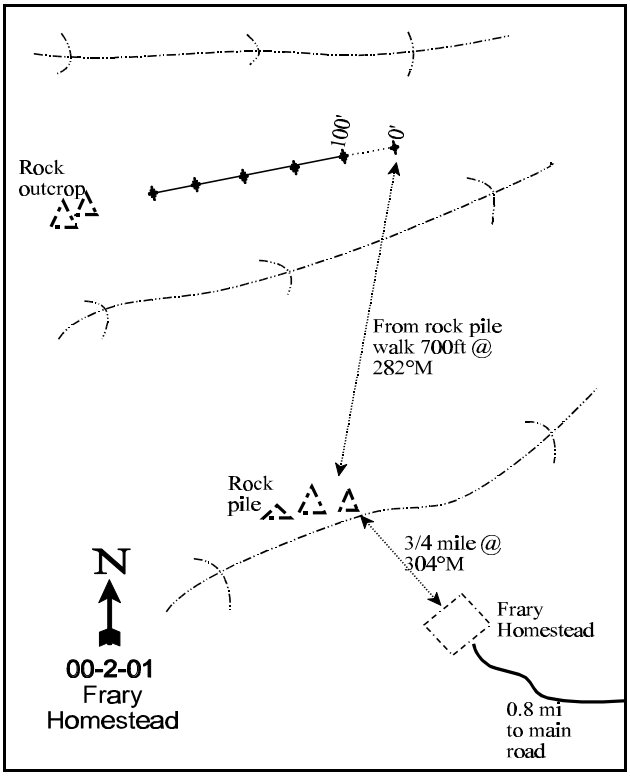
Compass bearing: frequency baseline 208 degrees magnetic.

Frequency belt placement: line 1 (11ft), line 2 (34ft), line 3 (59ft), line 4 (71ft), line 5 (95ft).

LOCATION DESCRIPTION

From the main gate on Antelope Island, travel south for approximately 6.9 miles. Turn west and travel 0.8 miles to the Frary homestead and gravesite. From the Frary gravesite, walk 3/4 mile at a bearing of 304 degrees magnetic to the left most rock on the end of the ridge. From the left most rock walk 15 paces at a bearing of 295 degrees magnetic to a rock pile. From the rock pile walk 700 feet at a bearing of 282 degrees magnetic to the 0-foot baseline stake. The baseline runs 208 degrees magnetic towards some rock outcrops.





Map Name: Antelope Island

Diagrammatic Sketch

Township 3N , Range 3W , Section 21

UTM 4536210 N 399242 E

DISCUSSION

Trend Study No. 00-2

The Frary Homestead study is located on the east side of Antelope Island north of the Frary Homestead grave site. The site is on an alluvial fan with drainages on both sides (north and south). Slope is approximately 8% with a northeast aspect. Elevation is about 4,800 feet and water is flowing in a creek about ½ mile to the south. The ridge, where the site was placed, has burned several times in the past, resulting in the presence of very little browse. Some surrounding ridges and drainages are still covered with sagebrush. Bison use of the area has been moderate. Numerous bedding sites and buffalo pats were noted in 1996. A pellet group transect read along the baseline in 2001 showed 28 bison days use/acre (68 bison days use/ha). Bighorn sheep pellet groups were also found on the transect in low numbers.

Soil textural analysis indicates a sandy loam with a slightly acidic pH (6.1). Soils are moderately deep with an estimated effective rooting depth of nearly 27 inches. They are well drained with very little gravel in the profile. Moisture was apparent in the profile while digging. Vegetation and litter cover are abundant and cover nearly all of the ground surface with very low amounts of bare soil.

Browse does not play an important role at this study due to recurring fire. Broom snakeweed and Wyoming big sagebrush are encountered on the site, but at low to very low densities. The estimated density for broom snakeweed was 260 plants/acre in 1996 and 2001. The majority of plants are mature and the population appears to be stable. Wyoming big sagebrush density had an estimated density of 20 plants/acre in 1996 and 2001. No young or seedling sagebrush plants have been sampled in any of three sampling periods. This will likely continue due to high competition with annual weeds in the understory. No utilization is apparent on either species.

Grass composition is dominated by cheatgrass, which is thick and uniformly distributed over the site. Cheatgrass was sampled in all quadrats in both 1996 and 2001 with a correspondingly very high nested frequency value in all sampling years. Other annual grass species include Japanese brome and rattail fescue, both of which significantly increased in nested frequency in 1996. In 2001, rattail fescue significantly decreased in nested frequency, and Japanese brome increased in nested frequency, but not significantly. Six perennial grass species have been sampled on the site. Purple three-awn is the most abundant perennial grass followed by Sandberg bluegrass and bulbous bluegrass. These three perennial species all significantly increased in nested frequency in 2001. Sum of nested frequency of all perennial grasses combined increased by 20% in 2001.

The forb composition is dominated by weedy annual species. Storksbill is the dominate forb providing over 95% of the total forb cover in 1996 and 2001. Yellow salsify and annual agoseris were both fairly common in 1996, but significantly decreased in nested frequency in 2001 with the drier conditions. Sum of nested frequency for all perennial forbs decreased by 53% in 2001 as a result of extremely dry conditions in Northern Utah during the winter and spring of 2000-2001.

1996 TREND ASSESSMENT

Soil trend is stable. Although vegetative cover has declined slightly since 1995, there is still adequate cover to prohibit erosion. Bare ground cover has slightly declined while litter cover is nearly the same. The browse trend is stable with very few broom snakeweed plants encountered. Herbaceous weedy species, primarily annuals, will provide competition to browse species and prohibit the population from expanding. The herbaceous understory is dominated by annual and weedy species. Cheatgrass dominates the site, although there are some perennial species still in the community. Even if fire is suppressed on the site, it will be

extremely difficult to change the community composition. Herbaceous trend is stable at this time but with a very poor composition.

TREND ASSESSMENT
soil - stable (3)
browse - stable (3)
herbaceous understory - stable but with very poor composition (3)

2001 TREND ASSESSMENT

Trend for soil is stable. Although the vegetative composition is dominated by annuals, vegetation and litter cover are abundant. Together they cover nearly the entire ground surface. Browse is unimportant on this study due to the recurrence of fire at short intervals. Snakeweed and sagebrush both remain at low, but identical densities compared to 1996 estimates. There is still no sagebrush recruitment at the present time. This will likely continue in the future with the dominance of annuals, especially cheatgrass. Trend for the herbaceous understory is stable, but remains in extremely poor condition. Perennial grasses increased in sum of nested frequency as a group, however, perennial forbs decreased as a group. Desirable perennial species are in low abundance. Cheatgrass remains dominant.

TREND ASSESSMENT
soil - stable (3)
browse - n/a
herbaceous understory - stable (3)

HERBACEOUS TRENDS --
Herd unit 00 , Study no: 2

Type	Species	Nested Frequency			Quadrat Frequency			Average Cover %		
		'95	'96	'01	'95	'96	'01	'95	'96	'01
G	Aristida purpurea	$_{a}$185	$_{b}$220	$_{c}$279	71	81	86	5.05	9.79	19.31
G	Bromus japonicus (a)	$_{a}$17	$_{b}$47	$_{b}$71	7	16	26	.03	.46	.89
G	Bromus tectorum (a)	$_{b}$482	$_{b}$480	$_{a}$463	98	100	100	43.42	34.31	28.07
G	Elymus cinereus	-	-	3	-	-	1	-	-	.15
G	Festuca myuros (a)	$_{a}$29	$_{c}$126	$_{b}$68	9	45	27	.26	1.58	.41
G	Poa bulbosa	$_{a}$6	$_{a}$8	$_{b}$115	3	4	43	.01	.02	2.95
G	Poa fendleriana	$_{b}$37	$_{c}$84	$_{a}$3	17	38	1	.28	.42	.00
G	Poa secunda	$_{c}$181	$_{a}$54	$_{b}$120	64	27	45	1.16	.13	.88
G	Sporobolus cryptandrus	$_{a}$24	$_{b}$81	$_{a}$39	11	37	15	.08	.87	.78
Total for Annual Grasses		528	653	602	114	161	153	43.72	36.36	29.38
Total for Perennial Grasses		433	447	559	166	187	191	6.59	11.24	24.09
Total for Grasses		961	1100	1161	280	348	344	50.31	47.60	53.47
F	Agoseris heterophylla	$_{c}$137	$_{b}$74	$_{a}$-	53	31	-	.63	.18	-
F	Aster spp.	-	10	-	-	3	-	-	.01	-
F	Cirsium undulatum	-	-	-	-	-	-	.00	.15	-

Type	Species	Nested Frequency			Quadrat Frequency			Average Cover %		
		'95	'96	'01	'95	'96	'01	'95	'96	'01
F	Delphinium nuttallianum	1	-	-	1	-	-	.00	-	-
F	Descurainia pinnata (a)	$_{c}$190	$_{a}$-	$_{a}$8	60	-	2	.42	-	.01
F	Draba nemorosa (a)	$_{c}$261	$_{a}$-	$_{b}$56	71	-	21	1.25	-	.22
F	Erodium cicutarium (a)	$_{ab}$257	$_{a}$246	$_{b}$313	67	81	90	5.39	2.84	8.91
F	Erigeron divergens	$_{a}$2	$_{b}$51	$_{b}$42	1	20	20	.00	.90	.59
F	Heterotheca villosa	-	-	-	-	-	-	-	-	.00
F	Holosteum umbellatum (a)	$_{b}$21	$_{a}$-	$_{b}$14	7	-	6	.20	-	.08
F	Lactuca serriola	$_{c}$106	$_{b}$70	$_{a}$9	47	29	3	.41	.32	.01
F	Lychnis drummondii	-	-	27	-	-	15	-	-	.07
F	Machaeranthera spp	9	-	-	3	-	-	.01	-	-
F	Polygonum douglasii (a)	-	3	-	-	1	-	-	.00	-
F	Ranunculus testiculatus (a)	$_{b}$184	$_{a}$2	$_{a}$-	53	1	-	1.48	.00	-
F	Sisymbrium altissimum (a)	12	2	7	5	1	4	.02	.00	.19
F	Taraxacum officinale	6	9	11	3	4	6	.05	.07	.13
F	Tragopogon dubius	$_{a}$12	$_{b}$96	$_{c}$37	5	46	16	.02	.51	.37
F	Verbascum blattaria	$_{a}$-	$_{c}$61	$_{b}$48	-	27	28	.01	.93	2.96
Total for Annual Forbs		925	253	398	263	84	123	8.78	2.86	9.42
Total for Perennial Forbs		273	371	174	113	160	88	1.16	3.09	4.15
Total for Forbs		1198	624	572	376	244	211	9.94	5.95	13.57

Values with different subscript letters are significantly different at alpha = 0.10 (annuals excluded)

BROWSE TRENDS --
Herd unit 00 , Study no: 2

Type	Species	Strip Frequency			Average Cover %		
		'95	'96	'01	'95	'96	'01
B	Artemisia tridentata wyomingensis	0	1	1	-	.03	.63
B	Gutierrezia sarothrae	6	7	10	.01	.19	.45
Total for Browse		6	8	11	0.00	0.22	1.07

BASIC COVER --
Herd unit 00 , Study no: 2

Cover Type	Nested Frequency			Average Cover %		
	'95	'96	'01	'95	'96	'01
Vegetation	497	495	489	70.77	62.96	65.87
Rock	71	6	6	.36	.03	.01
Pavement	-	115	46	0	1.22	.11
Litter	499	500	478	76.29	76.46	60.50
Cryptogams	11	19	3	.02	1.03	.00
Bare Ground	41	63	39	1.21	.78	.44

SOIL ANALYSIS DATA --
Herd Unit 00, Study no: 02, Frary Homestead

Effective rooting depth (in)	Temp °F (depth)	PH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
26.9	58.4 (19.7)	6.1	69.7	15.0	15.3	1.7	21.2	179.2	.3

PELLET GROUP FREQUENCY --
Herd unit 00 , Study no: 2

Type	Quadrat Frequency		
	'95	'96	'01
Bighorn Sheep	-	-	1
Deer	-	-	4
Bison	5	15	9

Pellet Transect	
Pellet Groups per Acre	Days Use per Acre (ha)
01	01
96	N/A
87	7 (17)
331	28 (68)

BROWSE CHARACTERISTICS --
Herd unit 00 , Study no: 2

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Artemisia tridentata wyomingensis																		
M	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	96	1	-	-	-	-	-	-	-	-	1	-	-	-	20	10	12	1
	01	1	-	-	-	-	-	-	-	-	1	-	-	-	20	23	43	1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'95	00%	00%	00%	
'96	00%	00%	00%	+ 0%
'01	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'95	0	Dec:		-
'96	20			-
'01	20			-

Chrysothamnus viscidiflorus																		
M	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0	9	12	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'95	00%	00%	00%	
'96	00%	00%	00%	
'01	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			
'95	0	Dec:	-
'96	0		-
'01	0		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Gutierrezia sarothrae																		
S	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	6	-	-	-	-	-	-	-	-	6	-	-	-	120			6
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	95	8	-	-	-	-	-	-	-	-	8	-	-	-	160			8
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	01	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
M	95	3	-	-	-	-	-	-	-	-	3	-	-	-	60	9	11	3
	96	13	-	-	-	-	-	-	-	-	13	-	-	-	260	11	11	13
	01	5	-	-	-	-	-	-	-	-	5	-	-	-	100	8	10	5
D	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	01	6	-	-	1	-	-	-	-	-	3	-	-	4	140			7
X	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	140			7

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'95	00%	00%	00%	+15%
'96	00%	00%	00%	+ 0%
'01	00%	00%	31%	

Total Plants/Acre (excluding Dead & Seedlings)				
'95	220	Dec:		0%
'96	260			0%
'01	260			54%